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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/053,104	01/24/2002	Hieronymus Andriessen	27500-78	1839

7590 01/07/2004  
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EXAMINER

ANDERSON, MATTHEW A

ART UNIT PAPER NUMBER

1765

DATE MAILED: 01/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/053,104	ANDRIESEN, HIERONYMUS	
	<b>Examiner</b>	<b>Art Unit</b>	
	Matthew A. Anderson	1765	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 24 January 2002.
- 2a) ☐ This action is FINAL.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☒ Claim(s) 8 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                  | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)         | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other:  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Higgins et al. (US 5,879,715).

Higgins et al. discloses process and system for production of inorganic nano-particles. Precipitation occurs by ultrafiltration as per the abstract. In col. 5 lines 15-35 the dissolved metal salt may contain zinc and manganese. The dissolved precipitating agent or reactant may be selected from the group containing soluble hydroxides, carbonates, mineral acids, organic acids, sulfides, halides, boro-hydrides, and chalcogenides, and combinations thereof. In col. 4 lines 33+ the mixed aqueous solutions are precipitated and subjected to an ultra-filtration. The solutions (i.e. microemulsions) are described as containing a surfactant in col. 6 lines 1-14.

### *Claim Rejections - 35 USC § 103*

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 2-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Higgins et al.(US 5,879,715) in view of Vacassy et al. (Surface Controlled Nanoscale Materials for High-Added-Value Applications. Symposium, Surface Controlled Materials for High-Added-Value Applications Symposium, Boston, MA, USA, 30 Nov.-3 Dec. 1997, Mater. Res. Soc. Warrendale, USA, 1998.).

Higgins et al. is described above.

Higgins et al. does not specifically suggest producing the chalcogenide ZnS.

Vacassy et el. specifies the use of the surfactant thioglycerol in the formation of nanoparticles of ZnS by precipitating cations and anions.

Suggestion of Mn doping of the ZnS is disclosed.

It would have been obvious to one of ordinary skill in the art at the time of the present invention to combine the references because Higgins et al. suggests such precipitation and ultrafiltration process for chalcogenides and Vacassy et al. describes the precipitation process for such a chalcogenide.

In respect to claims 2,3, 5-6, it would have been obvious to one of ordinary skill in the art at the time of the present invention to form the chalcogenide ZnS by the precipitation/ultrafiltration process because Higgins et al. suggests its use for chalcogenides and Vacassy et al. precipitates the chalcogenide ZnS using the

thioglycerol surfactant. Vacassy does not specify the method of removing the nanoparticles from the solution and Higgins et al. discloses one such method.

In respect to claim 4, it would have been obvious to one of ordinary skill in the art at the time of the present invention to mix the required solutions because Higgins et al. discloses mixing of the solutions continuously in col. 6 lines 1-14.

In respect to claim 7, it would have been obvious to one of ordinary skill in the art at the time of the present invention to use the mineral acid polyphosphoric acid as the surfactant since such mineral acids were suggested by Higgins et al. in col. 5 lines 15-35.

### ***Allowable Subject Matter***

5. Claim 8 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

6. The following is a statement of reasons for the indication of allowable subject matter:

The prior art does not suggest that the surfactant be hexametaphosphate in such a precipitation/filtration method of forming nanoparticles.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew A. Anderson whose telephone

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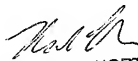
number is (703) 308-0087. The examiner can normally be reached on M-Th,  
7:30-6.

If attempts to reach the examiner by telephone are unsuccessful, the  
examiner's supervisor, Nadine Norton can be reached on (703) 305-2667. The  
fax phone number for the organization where this application or proceeding is  
assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application  
or proceeding should be directed to the receptionist whose telephone number is  
(703) 308-0661.

MAA

December 13, 2003

  
NADINE G. NORTON  
PRIMARY EXAMINER  
SUPERVISOR